

WHAT IS CLAIMED IS:

1. An optical assembly comprising at least one light emitting panel member having at least one input edge for receiving light from at least one light source, and at least one pattern of individual optical deformities on or in at least one surface area of the panel member for producing at least one light output distribution from the panel member, each of the deformities having a length and width that is quite small in relation to the length and width of the panel member, at least some of the deformities having at least one well defined surface, the at least one light output distribution having a form or shape of at least one of text, graphics, logo or image.

2. The assembly of claim 1 wherein the at least one output distribution has the form of at least one of text, graphics, logo or image.

3. The assembly of claim 1 wherein the at least one output distribution has the shape of at least one of text, graphics or logo.

4. The assembly of claim 1 wherein the at least one light output distribution is located in another light output distribution of the panel member to create a watermark, security marking, label or other effect in the another output distribution.

5. The assembly of claim 1 wherein the optical deformities of the at least one pattern are varied in at least one of the following characteristics: size, shape, density, placement, angle, rotation or type.

6. The assembly of claim 5 wherein the optical deformities of the at least one pattern are varied to obtain a substantially uniform intensity of the at least one output distribution.

7. The assembly of claim 5 wherein the optical deformities of the at least one pattern are varied to obtain at least one multi-intensity output distribution.

5 8. The assembly of claim 1 wherein the at least one light source is a colored light source to obtain at least one colored output distribution.

10 9. The assembly of claim 1 wherein the at least one panel member has at least two input edges for receiving light from at least two light sources to obtain the at least one output distribution.

15 10. The assembly of claim 9 wherein the at least two input edges receive light from different colored light sources, and at least some of the deformities are shaped or oriented preferentially to cause the different colored light received by the different input edges to create at least one multi-colored output distribution.

20 11. The assembly of claim 1 further comprising another pattern of individual optical deformities on or in another surface area of the at least one panel member for producing another light output distribution from the panel member.

25 12. The assembly of claim 11 wherein the another output distribution is substantially larger than the one output distribution.

13. The assembly of claim 11 wherein the one output distribution is located on the another output distribution to create a watermark, security marking, label or other effect on the another output distribution.

30 14. The assembly of claim 11 wherein the deformities on or in the another surface area are varied in at least one of the following characteristics: size, shape, density, placement, angle, rotation or type.

15. The assembly of claim 14 wherein the deformities on or in the another surface area are varied to obtain the another output distribution that is substantially uniform.

5 16. The assembly of claim 14 wherein the deformities on or in the another surface area are varied to obtain the another output distribution that is non-uniform.

10 17. The assembly of claim 11 wherein the intensity of the one output distribution is greater than the intensity of the another output distribution.

18. The assembly of claim 11 wherein the intensity of the one output distribution is less than the intensity of the another output distribution.

15 19. The assembly of claim 11 wherein the intensity of the one output distribution varies.

20 20. The assembly of claim 1 wherein a plurality of the panel members are in overlying relation to one another, each of the panel members having at least one different light output distribution that together produce at least one composite output distribution when viewed through the panel members.

25 21. The assembly of claim 1 further comprising at least one other light emitting panel member having a different light output distribution than the one panel member, the panel members producing at least one composite output distribution when placed in overlying relation to one another and viewed through the panel members.

30 22. The assembly of claim 20 wherein the other panel member has at least one output distribution in the form or shape of at least one of text, graphics, logo or image.

23. The assembly of claim 21 wherein each of the panel members receives light from at least one different colored light source to produce at least one multi-colored composite output distribution when viewed through the panel members.

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24. The assembly of claim 21 wherein the output distribution of each of the panel members produces one or more parts of a more complex output distribution that is visible through the panel members.

10 25. The assembly of claim 21 wherein the intensity of at least one output distribution of each of the panel members is different and creates at least one multi-intensity composite output distribution that is visible through the panel members.

15 26. The assembly of claim 21 further comprising a display overlying the panel members, the output distributions of the panel members being visible through the display.

20 27. The assembly of claim 26 wherein the display is a liquid crystal display.

25 28. The assembly of claim 21 further comprising at least one light redirecting film between the display and one of the panel members that allows different light output distributions to be seen when the panel members are viewed through the display from different angles.

30 29. The assembly of claim 1 further comprising a display overlying the panel member, the at least one output distribution of the panel member being visible through the display.

30 30. The assembly of claim 29 further comprising at least one light redirecting film between the panel member and the display that allows different

light output distributions to be seen when the panel member is viewed through the display from different angles.

5        31. The assembly of claim 1 further comprising at least one light redirecting film in close proximity to the at least one panel member that allows different light output distributions to be seen when the panel member is viewed through the film from different angles.

10        32. The assembly of claim 31 wherein the at least one film is a prismatic or lenticular brightness enhancing film or light management film.

15        33. The assembly of claim 1 wherein the optical deformities of the at least one pattern are on or in one side of the at least one panel member, and additional optical deformities are on or in the opposite side of the at least one panel member that allow different output distributions to be seen when the at least one panel member is viewed from different angles through the opposite side.

20        34. The assembly of claim 33 wherein the additional optical deformities are prismatic or lenticular optical deformities.

25        35. The assembly of claim 33 wherein the additional optical deformities allow different output distributions in the form or shape of text, graphics, logo or image to be seen when the panel member is viewed from different angles through the opposite side.

30        36. An optical assembly comprising at least one light emitting panel member having at least one input edge for receiving light from at least one light source, and at least one pattern of individual optical deformities on or in at least one surface area of the panel member for producing at least one light output distribution from the panel member, each of the deformities having a length and width that is quite small in relation to the length and width of the panel member, at least some of the deformities having at least one sloping surface that

intersects the at least one surface area, the at least one light output distribution having a form or shape of at least one of text, graphics, logo or image.

5        37. The assembly of claim 36 wherein the at least one light output distribution is located in another light output distribution of the panel member to create a watermark, security marking, label or other effect in the another output distribution.

10        38. The assembly of claim 36 wherein the optical deformities of the at least one pattern are varied in at least one of the following characteristics: size, shape, density, placement, angle, rotation or type.

15        39. The assembly of claim 36 wherein the at least one sloping surface is planar.

40. The assembly of claim 36 wherein the at least one sloping surface is curved.

20        41. The assembly of claim 36 wherein the at least one panel member has top and bottom surfaces, and the at least one pattern of individual optical deformities is on or in the top surface of the at least one panel member.

25        42. The assembly of claim 36 wherein the at least one panel member has top and bottom surfaces, and the at least one pattern of individual optical deformities is on or in the bottom surface of the at least one panel member.

43. The assembly of claim 36 wherein the at least one panel member comprises two or more layers.

30        44. The assembly of claim 36 wherein the at least one panel member receives light from at least two different colored light sources.

45. An optical assembly comprising at least one light emitting panel member having at least one input edge for receiving light from at least two different colored light sources, and at least one pattern of individual optical deformities on or in at least one surface area of the panel member for producing at least one light output distribution from the panel member, each of the deformities having a length and width that is quite small in relation to the length and width of the panel member, the at least one light output distribution having a form or shape of at least one of text, graphics, logo or image.

10 46. The assembly of claim 45 wherein the different colored light sources are different colored light emitting diodes.

15 47. The assembly of claim 45 wherein the different colored light sources are light emitting diodes having different colored chips.

48. The assembly of claim 45 wherein the different colored light sources are flashed to produce a desired colored light output distribution.

20 49. The assembly of claim 45 wherein the at least one panel member has at least two input edges for receiving light from the at least two different colored light sources to obtain the at least one output distribution.

25 50. The assembly of claim 49 wherein different ones of the deformities are shaped or oriented preferentially to cause the different colored light received by the different input edges to create at least one multi-colored output distribution.

30 51. The assembly of claim 45 wherein the at least one light output distribution is located in another light output distribution of the panel member to create a watermark, security marking, label or other effect in the another output distribution.

52. The assembly of claim 45 wherein the optical deformities of the at least one pattern are on or in one side of the panel member, and additional optical deformities are on or in the opposite side of the panel member to allow different output distributions to be seen when viewed through the opposite side from different angles.

53. The assembly of claim 52 wherein the additional optical deformities are prismatic or lenticular optical deformities.

10 54. The assembly of claim 45 further comprising at least one light redirecting film in close proximity to the at least one panel member to allow different output distributions to be seen when the at least one panel member is viewed through the at least one film from different angles.

15 55. The assembly of claim 54 wherein the at least one film is a prismatic or lenticular brightness enhancing film or light management film.

20 56. The assembly of claim 45 further comprising a display overlying the at least one panel member, the at least one output distribution being visible through the display.

57. The assembly of claim 56 wherein the display is a liquid crystal display.

25 58. An optical assembly comprising at least one light emitting panel member having at least one input edge for receiving light from at least one light source, at least one pattern of individual optical deformities on or in at least one surface area of the panel member for producing at least one light output distribution from the panel member, each of the deformities having a length and width that is quite small in relation to the length and width of the panel member, the at least one light output distribution having a form or shape of at least one of text, graphics, logo or image, and another pattern of individual optical deformities

on or in another surface area of the at least one panel member for producing another light output distribution from the panel member.

5        59.    The assembly of claim 58 wherein the another output distribution is substantially larger than the one output distribution.

10        60.    The assembly of claim 58 wherein the one output distribution is located on the another output distribution to create a watermark, security marking, label or other effect on the another output distribution.

15        61.    The assembly of claim 58 wherein the deformities on or in the another surface area are varied in at least one of the following characteristics: size, shape, density, placement, angle, rotation or type.

20        62.    The assembly of claim 61 wherein the deformities on or in the another surface area are varied to obtain the another output distribution that is substantially uniform.

25        63.    The assembly of claim 61 wherein the deformities on or in the another surface area are varied to obtain the another output distribution that is non-uniform.

64.    The assembly of claim 58 wherein the intensity of the one output distribution is greater than the intensity of the another output distribution.

25        65.    The assembly of claim 58 wherein the intensity of the one output distribution is less than the intensity of the another output distribution.

30        66.    The assembly of claim 58 wherein the intensity of the one output distribution varies.

67. An optical assembly comprising at least one light emitting panel member having at least one input edge for receiving light from at least one light source, at least one pattern of individual optical deformities on or in at least one surface area of the panel member for producing at least one light output distribution from the panel member, each of the deformities having a length and width that is quite small in relation to the length and width of the panel member, the at least one light output distribution having a form or shape of at least one of text, graphics, logo or image, and at least one other light emitting panel member having at least one light output distribution, the panel members producing at least one composite output distribution when placed in overlying relation to one another and viewed through the panel members.

68. The assembly of claim 67 wherein the output distribution of each of the panel members is different.

69. The assembly of claim 67 wherein the at least one output distribution of the other panel member is in the form or shape of at least one of text, graphics, logo or image.

70. The assembly of claim 67 wherein each of the panel members receives light from at least one different colored light source to produce at least one multi-colored composite output distribution when viewed through the panel members.

71. The assembly of claim 67 wherein the output distribution of each of the panel members produces one or more parts of a more complex output distribution that is visible through the panel members.

72. The assembly of claim 67 wherein the intensity of at least one output distribution of each of the panel members is different and creates at least one multi-intensity composite output distribution that is visible through the panel members.

73. The assembly of claim 67 further comprising a display overlying the panel members, the output distributions of the panel members being visible through the display.

5 74. The assembly of claim 73 wherein the display is a liquid crystal display.

10 75. The assembly of claim 73 further comprising at least one light redirecting film between the display and one of the panel members that allows different light output distributions to be seen when the panel members are viewed through the display from different angles.

15 76. An optical assembly comprising at least one light emitting panel member having at least one input edge for receiving light from at least one light source, at least one pattern of individual optical deformities on or in one side of the panel member for producing at least one light output distribution from the panel member having a form or shape of at least one of text, graphics, logo or image, and another pattern of individual optical deformities on or in the opposite side of the at least one panel member for producing another light output distribution from the panel member having another form or shape of at least one of text, graphics, logo or image, each of the deformities having a length and width that is quite small in relation to the length and width of the panel member.

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25 77. The assembly of claim 76 wherein the one output distribution and the another output distribution produce at least one composite light output distribution when viewed through the panel member.

30 78. The assembly of claim 76 wherein the one output distribution and the another output distribution produce two separate and distinct output distributions when viewed through the panel member.

79. The assembly of claim 76 wherein the one output distribution and the another output distribution are separately viewable through the panel member from different angles.